A qualitative analysis of psychological processes mediating quality of life impairments in chronic daily headache

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Abstract
Quality of life impairments are greater in chronic daily headache (CDH) than in episodic headache conditions like migraine. This qualitative interview study aimed to identify psychological processes associated with quality of life impairments among individuals meeting diagnostic criteria for CDH. Grounded theory analysis showed that perceived loss of control was the central experience mediating the impact of CDH on quality of life. The results provide explanations for previous quantitative findings about quality of life impairments in CDH and could inform interventions to reduce the impact of CDH. Further research could also examine the roles played by perceived control in the onset and development of CDH, including possible links with pre-emptive analgesic use.

Keywords: Chronic daily headache, quality of life, control, analgesics, grounded theory.

Introduction

Chronic daily or near-daily headache (CDH) is an increasingly common problem with significant implications for sufferers' quality of life. The condition involves head pain that is dull and aching in quality and moderate to severe in intensity, lasting over four hours per day and occurring on 15 or more days per month, though more severe pain and symptoms similar to migraine may also occur. Diagnostic criteria differentiate CDH from migraine and other types of intermittent headache (Silberstein *et al*., 1994, 1996). The condition affects 2% to 5% of the general population (Castillo *et al*., 1999; Hagen *et al*., 2000; Lanteri-Minet *et al*., 2003), and accounts for as many as 40% of patients attending specialist headache clinics (Pascual *et al*., 2001). The causes are not well understood, but CDH frequently develops from episodic tension or migraine headaches into a refractory syndrome that is sometimes associated with analgesic overuse (Konno *et al*., 1999; Srikiatkhachorn, 2001). Treatment involves a combination of pharmacological and behavioural approaches, and one review concluded that "reduction of pain is important, but ultimately reducing disability and improving quality of life are the most appropriate therapeutic goals" (Wheeler, 1999, p. 485).

Quality of life research is very well developed for episodic types of headache, especially migraine, including migraine-specific measures of quality of life (Mannix & Solomon, 1998; Solomon, 1997). Less is known about quality of life in CDH, but there is consistent evidence that CDH has a greater impact on quality of life than episodic headache conditions such as migraine. In a large general population study in France, for example, the functional impact of headache was greater for CDH than for episodic migraine (Lanteri-Minet *et al*., 2003). Comparisons between CDH and episodic headache types using health-related quality of life measures such as the SF-36 have indicated poorer outcomes for CDH in clinical and non-clinical samples in Spain (Monzon & Lainez, 1998; Guitera *et al*., 2002), the USA (Meletiche *et al*., 2001), and Taiwan (Wang *et al*., 2001).

Quantitative comparisons of quality of life between CDH and other headache types are limited by the possibility that CDH affects individuals in qualitatively different ways because of distinctive features of the condition. Headache chronicity is one such feature and, in one analysis, quality of life was affected more by the frequency than the intensity of headache pain (Guitera *et al*., 2002). Chronicity and headache may be an especially burdensome combination for sufferers; in one study, quality of life was lower for adolescents with chronic headaches than those with chronic pain in other parts of the body (Hunfeld *et al*., 2001). The way in which CDH develops may also affect its impact on patients' quality of life. The causes of CDH are still unclear, but there is reasonable consensus about the importance of the transition from intermittent to chronic headaches, and in particular from migraine to transformed migraine (Spierings *et al*., 2000; Konno *et al*., 1999). Some descriptions point to analgesic overuse as a causal factor: "Migraineurs frequently develop the habit of taking excessive amounts of drugs in attempts to obtain headache relief, thereby precipitating chronic rebound headaches or interdose withdrawal headaches. For these reasons, in many patients migraine develops into transformed migraine…" (Konno *et al*., 1999, p. 98). From a patient's perspective, the development of CDH from intermittent headache conditions would include increasing frequency of headaches, experience of treatment failure, and increasing reliance on analgesics.

Barofsky (2003) suggested that qualitative methods could provide insights into the cognitive processes underlying summary quantitative measures of quality of life. Qualitative research can also provide psychological insights into how personal experiences of pain, and the meanings attached to them, mediate the impact of pain on quality of life. In chronic benign low back pain, for example, confusion, fear about the future, vulnerability to shame, and feeling unable to explain the persistence of their pain led sufferers to withdraw from social contact (Osborne & Smith, 1998). Qualitative methods have rarely been used in headache research, despite the contribution they can make to our understanding of patients' perspectives (Peters *et al*., 2002, 2003). In the present study we used grounded theory to explore patients' experiences of quality of life impairments associated with CDH. The aim was to provide insights into psychological processes that could help to explain the quantitative findings of greater quality of life impairments in CDH compared with other headache types.

Methods

Participants

Purposive theoretical sampling (Ritchie *et al*., 2003) was used to achieve comparability between participants in the present study and those in previous, quantitative studies of chronic daily headache. The inclusion criteria were age over 18 years, a previous clinical diagnosis of CDH, and headaches lasting at least four hours on at least 15 days per month for at least one year (the diagnostic criteria for CDH; Silberstein *et al*., 1994, 1996). The exclusion criteria were antidepressant use or a history of any illness that could affect associations between headache and quality of life (for example, one person was excluded because of asthma). Individuals meeting those criteria were recruited using a snowballing technique, which continued until saturation was reached in the data analysis. There were five female and four male participants ranging in age from 32 to 55 years, with a mean of 41 years. Women ranged in age from 32 to 55 with a mean of 45 years, and men from 45 to 52 with a mean of 49 years. There were six English and three Finnish participants. Most were employed, in a range of professions; one was unemployed and one was a student. Six were married, two were single, and one was divorced. The age of onset of headache ranged from 25 to 36, with a mean of 29 years. All the participants had sought medical assistance, including five who had consulted general practitioners and six who had sought specialist help. All used analgesics for headaches and six used analgesics every day. The severity of daily or near-daily headaches ranged from moderate to severe and all had more severe episodic headaches ranging in frequency from one to ten days per month in addition to daily headache. There were no systematic differences between genders or nationalities. Participant details are shown in table 1.

Data collection

The interviews were semi-structured, with 17 open-ended questions that all participants were asked and further questions as necessary to elicit descriptions of the impact of CDH on physical, occupational, social and psychological areas of life. The interviews lasted around one hour, were conducted in either English or Finnish, and were all tape-recorded. The tape recordings were transcribed verbatim in the language in which they were recorded. The three Finnish transcripts were translated into English for analysis and back-translated to Finnish to verify the accuracy of the translation.

Table 1. Participant details

Participant	Age	Occupation	Marital status	Age of onset	Medical History	CDH severity	Number of more severe headaches per month
'Andrew'	52	Civil engineer	Married	25	Attended specialist headache unit	Moderate /severe	4
'Karen'	36	Student/part-time office worker	Single	26	Consulted GP and hospital neurologist	Severe	5
'Robert'	45	Unemployed	Married	29	Attended specialist headache unit	Severe	10
'Tim'	47	Shopkeeper	Married	36	Consulted GP	Moderate	4
'Maria'	32	Make-up artist	Single	28	Consulted GP and physiotherapist	Moderate	1-4
'Sophie'	55	Cafeteria worker	Married	27	Consulted neurologist	Severe	8
'Kate'	51	Production manager	Married	31	Attended specialist headache clinic	Severe	1-5
'Julie'	49	Office worker	Married	35	Consulted GP	Moderate /severe	3
'Neal'	50	Self-employed artisan	Divorced	26	Consulted GP	Moderate /severe	2-3

Note: Names have been changed to protect participants' anonymity. GP = General practitioner

Data analysis

The data analysis was based on established principles for grounded theory (eg., Chamberlain, 1999; Grbich, 1999). The first step was line-by-line, open coding of each interview transcript to allow initial categories to emerge from the data. Axial coding was then conducted in which initial categories were refined, developed and related to one another as common elements were identified. Comparisons between categories led to the identification of further common elements and the generation of broader categories that were consistent across interviews. Index cards were used to cross-reference between categories and transcripts and record points in the transcripts where categories emerged. When subsequent interviews took place, the transcripts were compared with existing categories, which were then further modified and developed. Selective coding was conducted to identify and verify a core category that reflected a developing theory about psychological processes underlying quality of life impairments. Saturation point was reached when the interviews did not add to categories or the core category. Open coding, axial coding and selective coding were undertaken in parallel and the description above does not reflect a strictly sequential process. All three types of coding involved a process of constant comparison between codes in the text, between codes and categories, and between categories. Memos were also generated in parallel with the coding process to indicate links between categories and between transcripts. Memos were not constrained in any way and represented hunches, questions, ideas, comments on the interviews, explanations of categories, and emerging theoretical reflections and links with existing literature.

Results

Categories of quality of life impairment

The data analysis revealed seven categories of quality of life impairment: daily activities; work and education; sleep, energy and concentration; social activities; emotional reactions; perceptions of self; and effects on partners and family.

Daily activities: Consistent with quantitative findings that CDH impairs physical abilities (eg., Meletiche *et al*., 2001; Cavallini *et al*., 1995), all the participants described how headaches affected their ability to perform daily activities such as bending over, carrying and lifting. Participants commonly waited for pain-free times of day to complete daily tasks, and had to prioritise daily activities according to what their headaches would permit:

> "First of all, I need to list everything regarding the daily tasks. If an electricity bill is due tomorrow it's the first one on the list and cleaning the house comes later because it's not that important to do exactly on a particular day. So I go down the list and do as many things as possible depending on my headache" (Kate, lines 17-21)

Work and education: Participants' performance in the workplace was affected by absences and decreased productivity due to headaches:

> " I have to cancel meetings and visits to the building sites and reschedule meetings. All this makes working more complicated. And it also reduces productivity… I mean that loss of working hours influences productivity" (Andrew, lines 112-115)

> "I can't accept any more work than I do now. Otherwise I couldn't finish the orders on time. I always have to take into consideration that there might be delays because of my headaches. So… I have to turn some offers down" (Neal, lines 39-42)

Impaired performance at work, frequent absences, and the inability to take on greater responsibilities all had effects on participants' income and economic status, especially for one participant who was made redundant and became unemployed because of CDH, and another who had to change jobs to seek lighter work. Headaches also had effects on participants' relationships with their colleagues, who were usually understanding and supportive but sometimes adopted negative attitudes when their own work was affected:

> "Most of them, they know about my problem and when I look a bit lost and tired and unfriendly, they know what's wrong. They usually come to ask me how I am that day and they try to support me. Sometimes though if I somehow influence their quality of work, they become annoyed…" (Julie, lines 78-81)

Sleep, energy and concentration: The impairments described above arose from the direct effects of headaches during the day, but headaches also affected participants' activities indirectly, through impaired sleep, leading to loss of energy and concentration even between headaches. Consistent with questionnaire studies (eg., Paiva *et al*., 1994; Spierings & van Hoof, 1997), participants felt they did not sleep enough and that quality of sleep was poor, leading to fatigue during the day:

> "My sleep is restless, short and sometimes painful… I mean I have headaches during the night" (Sophie, lines 45-46)

> "I have problems in falling asleep because I feel quite restless, especially if I have a headache when I go to bed… I do get up quite easily but… somehow I don't feel very fresh, let's say" (Andrew, lines 151-155).

Taking analgesics for headaches during the night was problematic for some participants, and several described how analgesics contributed to their tiredness or loss of energy:

> "Of course I take headache pills but sometimes it doesn't work or I didn't realise how bad a headache I had during the night, or I didn't wake up for that. Then if I had a bad headache I have to wake up several times a night to take some more medication and the regular awakenings are pretty disturbing" (Maria, lines 55-60)

> "I'm lacking concentration and I'm so tired that I can't speak. The painkillers that really help me, also cause drowsiness" (Julie, lines 52-53)

> "Or I might be just recovering from a very severe headache attack and I need to stay in bed. Sometimes the medication makes me feel a bit weak…" (Andrew, lines 32-34)

The chronic headache patients in Paiva *et al*.'s (1994) survey did not report problems at work due to sleepiness, but participants in the present study described effects on work and study that are more similar to those reported for patients with chronic illnesses other than headache (Manocchia *et al*., 2001):

> "After those restless nights I'm usually quite tired during the day and of course it affects my university work… it's difficult to concentrate on reading, I'm falling asleep all the time and things don't seem to stay in my memory" (Karen, lines 38-40)

Social activities: All the participants described how their social life was not as active as before their condition developed, and none reported having a currently active hobby. Daily headaches in addition to severe headache attacks combined with fatigue were the main reasons for the reduction in social contacts. The social restrictions imposed by headaches led to feelings of isolation and frustration:

> "[It makes me feel] frustrated and very annoyed [when I can't join friends for a drink]. And sometimes I have a feeling that I miss something very important when I don't meet my friends… I feel a bit isolated" (Maria, lines 111-113).

> "…nowadays I'm so worn-out that I'm just watching TV or taking naps… Somehow I'm lacking energy and … willpower to go to see them [friends] when I'm tired or having a headache, even mild headache. I can't go anywhere if I have a severe one… I probably have isolated myself a bit. And if I don't see them, I don't do anything special on my own, meaning going to the cinema or something. Social activities are quite rare in my life" (Neal, lines 87-93)

Social activities were affected by the need for analgesics as well as by headaches themselves, and participants described how their friends responded to their headaches and analgesic use:

> "I want to… live as normal life as possible… [for example] go on holiday without taking tens of different pills with me… (Maria, lines 189-190)

> "Our old friends know us by now and they don't mind if I cancel something at the last minute… they've got used to it, I think. Or probably they are annoyed but they cope with it… well, they are still our friends (laughing)" (Robert, lines 148-151)

> "I think they [friends] are more cautious when it comes to my health… if I take a painkiller when I am visiting them, they become very worried, which is a bit annoying really. Or then the other reaction is that they try to act as if nothing happened" (Robert, lines 185-188)

Emotional reactions: Participants' emotional responses to their headaches included guilt, frustration, stress, depression and fear, sometimes in response to impairments described earlier:

> "Because my headache affects every area of my life… sometimes more sometimes less… I feel quite trapped… and frustrated and angry. Yes, and sometimes depressed as well but I try to cope with it and I have to say that I have my ups and downs…" (Kate, lines 218-221)

Many participants expressed fears about their headaches, consistent with findings for other headache types. In recurrent headache, however, fear of pain was associated with the disruption of activities (Hursey & Jacks, 1992), whereas in the present study, participants' fears focused mainly on the prospect of worsening pain and how they and their families would cope:

> "I'm also a bit scared of the future… how we will cope with this and actually how I'm gonna cope with this if it gets worse. I'm a bit afraid of the pain… and afraid of how my family is going to cope with it if it gets worse. And how I will cope with it if I end up living alone one day. Scary" (Julie, lines 161-164)

Perceptions of self: Almost all the participants reported changes in the way others perceived them, which usually involved perceptions of weakness or being placed in a sick or dependent role in the family:

> "So they all have a picture of me as a sick girl in the family… Sometimes I also feel like a trouble to the others. Dependent on everybody…" (Karen, lines 180-185)

> "I used to be the one that people came to tell their problems and I used to be the strong one in the family… but now when I'm not so strong people tend to save me from hearing bad news and they tend to avoid asking any favours from me" (Tim, lines 132-135)

Effects on partners and family: Headaches had significant effects on family functioning. Consistent with findings on the effects of migraine on the family (Smith, 1998), participants reported that partners and families were mostly understanding and caring, with only occasional negative attitudes. However, many participants described how their headaches placed stress on their relationships, not only by affecting their own behaviour, but also because of the confusion, frustration and fear experienced by their partners:

> "I've noticed that I don't lose my temper that easily when I'm feeling okay. The stress and headache is not a good combination… When we are both tired and stressed and I'm in pain and she is worried about me, every little thing in our life seems to be magnified" (Tim, lines 123-127).

> "We have gone through a hell… an emotional hell because at one point we were both very tired of this situation and… and we started arguing over nothing and everything" (Julie, lines 128-130)

> "I think she [my wife] is quite scared of my headaches as well. I mean that she knows the signs… and she looks worried and nervous… She has told me that she is scared of… if something serious, like lethal, would happen to me. She is afraid of thrombosis or something" (Andrew, lines 72-76)

Participants were aware of ways in which their headaches affected their family and many believed they were a burden on their families and felt guilty about that. For participants not in established relationships, headaches affected the prospects of developing stable relationships:

> "…Sometimes I think that I'm causing a lot of extra work for my wife and probably I'm not able to help her in everyday things as I could if I didn't have this problem" (Robert, lines 67-69)

> "I broke up with my long-term boyfriend a few years ago and I actually find it really difficult to find a guy who would understand my headache problem… It's not very common at the beginning of the relationship that

> a girlfriend has a headache every evening - you know what I mean" (Karen, lines 143-154).

Psychological processes

The core category that emerged from axial and selective coding was reduced control, and the analysis led to a grounded theory that quality of life impairments in CDH are mediated by actual or perceived loss of control over the condition and its effects. Loss of control was manifested in participants being unable to take important decisions, being prevented from planning their business and social lives, being made more dependent on others than they were comfortable with, and being forced to adopt active strategies to increase the control they had over their lives. Cognitive, emotional, behavioural and interpersonal aspects of participants' responses to CDH all stemmed from the process whereby daily or near daily headaches reduced individuals' ability to control how their headaches affected their lives.

Some aspects of loss of control related to the effects of headaches on performance in a range of roles. A central feature of impairments to daily living, for example, was that CDH imposed limitations on the extent to which participants were able to make decisions about their everyday activities and behaviours:

> "The main thing that bothers me is that I don't have as much control over my life as my husband has, for example. My headache decides for me what I will do today or am I going to do anything" (Sophie, lines 227-230).

Impairments related to work and education affected planning for the future, for participants lost control over their medium-term and long-term occupational strategies because they were unable to depend on their performance at work:

> "[A] few years ago I was thinking of extending our shop and obviously widening our trade but... I didn't want to bite off more than I could chew… because of my headache. Already then my headache was daily and I was worried about loss of working hours" (Tim, lines 57-60)

Inability to plan because of headaches had especially pronounced effects on social activities. Cancelling planned social events because of headaches was associated with stress and frustration, and led many participants to avoid making social plans, preferring instead to arrange social activities at short notice:

> "It's not really worth planning weeks ahead because I don't know how I will feel that day. Of course, there are situations like that as well… then we plan and make arrangements but it will usually remain to be seen whether I will be able to put the plan into practice or not" (Robert, lines 140-144)

> "So that I don't have to cancel anything, I don't make very big plans. I like doing things at short notice… Then I know my condition and if I feel fine, I also enjoy my time" (Karen, lines 124-126)

Two participants described using analgesics in anticipation of pain to control the disruptive effects of headaches on social planning:

> "If I have planned something like weeks or days ago, I do take a few extra painkillers the previous night or evening to prevent a severe headache" (Neal, lines 104-106).

> "… I'm feeling a bit nervous about the coming evening and trying to feel okay… meaning that I'm taking painkillers for a mild headache and kind of trying to prevent the worse ones to come" (Julie, lines 112-115).

Feelings of reduced control were increased by dependency on family and friends, who some participants relied on to care for them during severe headaches. Dependency on others was especially troubling for participants who had previously led more independent lives, and descriptions of the feelings associated with dependency on others provide insights into the links between emotional well being and perceived control. Some participants believed that accepting help from others indicated weakness or failure, and made active attempts to resist being viewed as weak or dependent:

> "…when the headache is severe, I can't cope with it alone… I have to have somebody to give me medicine because I can't remember what I have taken and when…. I just want somebody to be around when it hits me" (Kate, lines 142-147)

> "…that's limiting my performance and abilities to help other people…and most of the time they are helping me. I'm kind of dependent on the others, which make me feel frustrated sometimes. And I'm kind of lacking control over my life. I would like to do whatever the situation requires but no… I have to do whatever my illness requires and allows me to do" (Andrew, lines 190-195)

> "Both my parents and my boyfriend think that I'm somehow weak because of my problem… which is not true. I'm very moody but not weak, otherwise I wouldn't be able to run my beauty shop. Sometimes I feel a bit angry with them when they think that I should be saved from hard life because of my headaches. No, actually I want to have responsibilities and feel important and useful. I try to forget the problems and live as normal life as possible" (Maria, lines 178-184)

Discussion

The grounded theory from this analysis was that beliefs and perceptions about loss of control are the central experiences mediating the impact of CDH on sufferers' quality of life. The implication is that key characteristics of CDH - its development from unsuccessfully treated episodic headaches into a near daily phenomenon - make sufferers particularly vulnerable to experiences of reduced control over how their lives are affected by their headaches. This provides a potential explanation for previous quantitative findings that quality of life was significantly lower in CDH than in episodic headache, and could provide the focus for interventions to treat or minimise the impact of CDH. The findings also provide hypotheses that could be tested by further quantitative research.

Loss of control has cognitive, behavioural, emotional and interpersonal aspects, some of which have been investigated in other ways in chronic headache patients. Emotional adjustment has been a particular focus for research. There is evidence of comorbidity between psychiatric disorders and CDH (Aronoff *et al*., 1997; Verri *et al*., 1998), and associations between emotional responses to pain and quality of life (Passchier *et al*., 1996). In one of the studies that reported lower quality of life among patients with CDH than those with episodic headaches, multiple regression was used to test the unique contribution to quality of life made by symptoms of anxiety and depression. Anxiety/depression scores had independent effects on all the SF-36 sub-scale scores examined, and accounted for some, but not all, of the differences in quality of life between CDH and episodic migraine (Wang *et al*., 2001). It seems likely from the present findings that measures of perceived control could help to account more fully for the additional quality of life impairments associated with CDH.

Perceived control has not featured prominently in headache research but has been shown to have an important influence on the impact of chronic pain conditions such as low back pain and fibromyalgia (eg., Burton *et al*., 1998; Culos-Reed & Brawley, 2000; Grant *et al*., 2002; Jensen *et al*., 2001; Tan *et al*., 2002). In arthritis, interventions to improve perceived control led to improvements in self-efficacy, cognitive symptom management, communication with doctors, exercise and relaxation (Barlow *et al*., 1999). Existing treatment recommendations for CDH emphasise the importance of behavioural and attitudinal changes (eg., Wheeler, 1999), but the present findings suggest that further treatment benefits could be obtained by developing interventions based on expertise in the management of other chronic pain conditions rather than other headache types, including interventions designed specifically to increase perceived control.

Prospective longitudinal studies will be needed to look at whether the processes identified in our analysis precede or follow the development of CDH. Those that precede or accompany the transition from episodic to chronic daily headaches would appear to play a causal role and could be targeted by primary treatment as well as by supportive interventions to minimise quality of life impairments. There are reasonable grounds to hypothesise that perceptions or beliefs about loss of control do play such a causal role, given current thinking about the way in which CDH develops from episodic headache conditions in a process that

involves treatment failure and increasing reliance on analgesics. One factor that has been proposed as a cause of some CDH is taking analgesics in anticipation of pain: "A common and probably key factor in medication overuse headache is pre-emptive use of drugs in anticipation of – rather than for – headache" (Steiner & Fontebasso, 2002, p. 883). It is unclear, however, whether analgesic overuse is associated with quality of life. Of two studies that compared SF-36 scores between CDH sufferers with and without analgesic overuse, one found lower scores among those with analgesic overuse (Guitera *et al*., 2002) and another found no differences (Monzon & Lainez, 1998).

No participants in the present study described their analgesic use in terms of overuse or dependence, or referred to analgesic use as a possible cause of their headaches, but the data included descriptions of analgesic use in anticipation of pain. In those cases, however, pre-emptive analgesic use was part of a strategy to retain or regain control over the effects of headaches on social activities and quality of life. There are two possible interpretations. One is that using analgesics in anticipation of pain is one of the ways in which loss of control is implicated in the development of CDH. If so, increasing perceived control over the effects of headaches could be a useful focus for treatment (and preventative) interventions that aim to reduce pre-emptive analgesic use. The other interpretation is that what appears as analgesic overuse can in fact help to reduce disability and improve quality of life in CDH. If so, emphasising the importance of analgesic overuse in CDH may risk stigmatising as analgesic abusers those patients who are genuinely attempting to cope with their condition. This issue was recently examined more systematically in sickle cell disease, another painful chronic illness where patients are frequently stigmatised as analgesic abusers. In that research, analgesic use in anticipation of pain was associated with active attempts to control pain, and made patients vulnerable to spurious perceptions of analgesic dependence that appeared to have an adverse influence on the outcomes of treatment for pain (Elander *et al*., 2003, 2004).

The present findings show how qualitative analyses can contribute to understanding quality of life impairments in CDH by providing insights into patients' experiences of the condition. Experiences of reduced control over the effects of headaches on participants' lives, and the emotional, behavioural and interpersonal responses to those reductions in perceived control, were the central psychological processes associated with quality of life impairments. Those processes provide potential explanations for previous findings that quality of life is more impaired in CDH than in episodic headache conditions, and could inform the development of interventions to enhance the quality of life of those affected. Further research could examine the potential role played by perceived control in the development of CDH, and examine the relationship between perceived control and pre-emptive analgesic use in more detail.

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